

REMARKS

The present invention as claimed includes pigments and methods of making pigments that have improved light scattering efficiency. Applicants find that these pigments characteristically have: 1) calcium carbonate spacer particles that have a substantially spherical shape and 2) a size range from about 0.1 to about 1.0 micron (100 nm to 1000 nm). These pigments can be produced using a surfactant, such as for example polyacrylic acid, during the calcium precipitation process. The cited prior art reference (Bolt U.S. Patent No. 5,886,069) does not disclose, teach or suggest the presently claimed invention.

Amended Claim

Claims 1, 4, 8, 11, 14, 23-24, and 30 have been amended to more clearly define that the pigment composition includes calcium carbonate spacer particles. Support is found in the specification at, for example, pages 11-13 and claim 10 as originally filed. No new matter has been added. None of these amendments are intended to narrow the scope of the claims.

Claim Objections

Applicants have canceled claims 3, 9, 10, 12, 16, 20, 21, 22, 25-29, 34- 40, 43, 46, and 47 without disclaimer. Applicants reserve the right to pursue these claims in a future application. Accordingly, any pending objections or rejections are rendered moot as to these claims.

Priority Claim

Applicants respectfully request the Examiner to acknowledge Applicants' priority claim of this application under 35 U.S.C. §119 to U.S. provisional application No. 60/308,963, filed July 30, 2001. The priority claim is on page 1 of the specification and on the declaration.

Rejection Under 35 U.S.C. §112, Second Paragraph

The Examiner rejected claims 1 and 12 under 35 U.S.C. §112, second paragraph, for allegedly being indefinite. The Examiner alleged that these claims merely set forth physical characteristics, which are indefinite.

Applicants respectfully traverse this rejection and submit that the meaning of the claims is definite to a person of ordinary skill in the art upon reading the specification. Nevertheless, in order to expedite prosecution, Applicants have canceled claim 12 and amended claim 1 to further include that the pigment composition contains one or more substantially spherical shaped calcium carbonate spacer particles. Support is found in the specification at, for example, pages 11-13 and claim 10 as originally filed. No new matter has been added. Accordingly, Applicants respectfully submit that the claims are definite and request withdrawal of this rejection.

Rejection Under 35 U.S.C. § 102 (b)

The Examiner rejects claims 1-48 under 35 U.S.C. §102 (b) as allegedly being anticipated by U.S. Patent No. 5,886,069 (Bolt). The Examiner asserts that Bolt discloses a titanium dioxide pigment having calcium carbonate dispersed on the surface where the size range of the calcium carbonate is 5 to 50 nanometers. Further, the Examiner asserts that the pigment is made using surfactants such as polyacrylate, and tetrapotassium pyrophosphate. The Examiner concludes that Bolt anticipates the present invention. Applicants respectfully traverse this rejection.

For a rejection to be sustained under 35 U.S.C. §102 (b), each element of the claimed invention must be disclosed in the cited prior art reference. Applicants have amended the claims to include that the pigment compositions have 1) calcium carbonate spacer particles that have a substantially spherical shape and 2) a size range from about 0.1 to about 1.0 micron (100 nm to 1000 nm). This size and shape leads to pigment compositions with enhanced light scattering ability.

Bolt teaches a particle size that is at least 2 to 20 times smaller than that of the presently claimed invention. More particularly, Bolt teaches an inorganic particle size of 5 to about 50 nm (0.005-0.05 microns), while the presently claimed invention is directed to calcium carbonate spacer particle sizes that are considerably larger --from about 100 nm to 1000 nm (0.1-1.0 micron).

The Examiner's attention is directed to Bolt's Summary of the Invention at column 3, lines 6-10:

The present invention provides a TiO₂ pigment consisting essentially of TiO₂ particles having substantially discrete inorganic particles having an average diameter size within the range of about **5 to about 50 nm** dispersed on the surfaces of the TiO₂ particles in an amount of less than 20 wt. % based on the total pigment weight (emphasis added).

Bolt at column 4, lines 35-41:

It is desirable that the inorganic particles be smaller than the TiO₂ pigment particles. Typically, the average size of the inorganic particles is within the range of about **5 to about 50 nm (0.005-0.05 microns)** in diameter, preferably about 7 to about 35 nm (0.007-0.035 microns), and more preferably about 10 to about 25 nm (0.01-0.025 microns) (emphasis added).

In fact, Bolt teaches that the particle size of 5 to about 50 nm is of major importance to his invention. The Examiner's attention is directed to Bolt at column 6, lines 6-13:

For purposes of this invention, **it is important** that the average size of the inorganic particles in the colloidal suspension (i.e., sol) be within the range of **about 5 to about 50 nm (0.005-0.05 microns) in diameter**, preferably about 7 to about 35 nm (0.007-0.035 microns), and more preferably about 10 to about 25 nm (0.01-0.025 microns). These inorganic particles sizes are generally the same sizes in the final TiO₂ pigment product.

Moreover, Bolt teaches that his calcium carbonate particles are polyhedron-shaped, while the silica particles are spherical shaped. The Examiner's attention is directed to Bolt at column 2, lines 37-40:

Calcium carbonate (CaCO₃) particles tend to **be polyhedron-shaped**, approximately equiaxial, and silica particles tend to be spherical-shaped (emphasis added).

Clearly, Bolt teaches away from pigment compositions of the present invention that have 1) calcium carbonate spacer particles that have a substantially spherical shape and 2) a size range from about 0.1 to about 1.0 micron (100 nm to 1000 nm). Thus, Bolt does not disclose each and every element of the claimed invention. Accordingly, Bolt does not anticipate, teach or render obvious Applicants' claimed invention. Applicants respectfully request that the rejection under 35 U.S.C. §102(b) be reconsidered and withdrawn.


Conclusion

All of the stated grounds of the rejections have been properly traversed, accommodated, or rendered moot. The reference cited by the Examiner does not anticipate or render the present invention obvious. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. Applicants believe that the present application is in condition for Allowance. Entry of amendment, and reconsideration of the application is respectfully requested.

If additional fees are deemed necessary for the filing of this Amendment, authorization is hereby given to charge or credit any such fees to Deposit Account No. 11-0171 for such sum.

If a telephone conference would be of assistance in furthering the prosecution of the application, Applicants' undersigned attorney requests that he be contacted at the telephone number provided below.

Respectfully submitted,



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